

REMARKS

Claims 1-20 were presented for examination, are pending and are rejected. Reconsideration is respectfully requested.

The 35 U.S.C. § 103 Rejections

Claims 1-8 and 14-19 are rejected as being unpatentable over Mearini et al. in view of Hawker et al. The rejection is respectfully traversed.

The Examiner has not presented a prima facie case that Applicants' claim 1 is obviousness. Claim 1 includes the element: "providing a substrate with a topological defect". Mearini et al. does not teach a method that includes a step of providing a substrate with a topological defect. The reference contemplates that the substrate is near atomically flat. For example, see column 2, lines 56-60 as well as both independent claims. Hawker et al. is cited as teaching topological defects having a diameter within a range from about 20 nm to about 50 nm; however, the secondary reference also fails to teach a method that includes a step of providing a substrate with a topological defect. Therefore the rejection of claim 1 should be withdrawn. The rejection of claims 2-8, 14 and 15 should be withdrawn at least because they depend from claim 1.

The Examiner has not presented a prima facie case that Applicants' claim 16 is obviousness. Claim 16 includes the element: a substrate with a topological defect". Mearini et al. does not teach an apparatus comprising a substrate with a topological defect. As discussed above, the reference contemplates an apparatus comprising a

substrate that is near atomically flat. As discussed above, Hawker et al. also fails to teach an apparatus comprising a substrate with a topological defect. Therefore the rejection of claim 16 should be withdrawn. The rejection of claims 17-19 should be withdrawn at least because they depend from claim 16.

Therefore the rejection should be withdrawn.

Claims 2-4, 16 and 17 appear to be rejected as being unpatentable over Murakami et al. The rejection is respectfully traversed.

Unlike the present claims 1 and 16, the reference does not provide a substrate with a defect nor does it teach the mitigation of a topological defect of a substrate. The reference teaches smoothing the interface between successive layers of a multilayer. Therefore claim 1 should be allowable over the reference and the rejection of claim 16 should be withdrawn. The rejection of claims 2-4 should be withdrawn at least because they depend from claim 1. The rejection of claim 17 should be withdrawn at least because it depends from claim 16.

Claims 7, 16 and 18 are rejected as being unpatentable over Mearini et al. in view of Hawker et al. and further in view of Lu et al. and Fairbairn et al. The rejection is respectfully traversed.

Regarding claim 7, as discussed above, neither Mearini et al. nor Hawker et al. teach a method that includes a step of providing a substrate with a topological defect. Neither Lu et al. nor Fairbairn et al. provide this missing element. The Examiner

cites Lu et al. as teaching that titanium dioxide layers are typically characterized by a high refractive index of 2.32. The Examiner cites Fairbairn et al. as teaching that amorphous carbon films typically have a refractive index in the range of 1.5 to 1.9. Therefore, the rejection of claim 7 should be withdrawn at least because it depends from claim 1.

Regarding claim 16, as discussed above, neither Mearini et al. nor Hawker et al. teach an apparatus comprising a substrate with a topological defect. Further, neither Lu et al. nor Fairbairn et al. teach an apparatus comprising a substrate with a topological defect. Therefore the rejection of claim 16 should be withdrawn. The rejection of claim 18 should be withdrawn at least because it depends from claim 16.

Therefore the rejection should be withdrawn.

Claim 14 is rejected as being unpatentable over Mearini et al. in view of Hawker et al. and further in view of Schmidt et al. The rejection is respectfully traversed.

The rejection of claim 14 should be withdrawn at least because it depends from claim 1.

Claims 9, 13 and 20 are rejected as being unpatentable over Murakami et al. in view of Hawker et al. and further in view of Hawryluk. The rejection is respectfully traversed.

The rejection of claims 9 and 13 should be withdrawn at least because they depend from claim 1. The rejection of claim 20 should be withdrawn at least because it depends from claim 16.

Claim 11 is rejected as being unpatentable over Murakami et al. in view of Hawker et al. and further in view of Mirkarimi et al. The rejection is respectfully traversed.

The rejection of claim 11 should be withdrawn at least because it depends from claim 1.

Claim 12 is rejected as being unpatentable over Murakami et al. in view of Hawker et al. and further in view of Knapp et al. The rejection is respectfully traversed.

The rejection of claim 12 should be withdrawn at least because it depends from claim 1.

Claims 1-8, 10, 14 and 16-19 are rejected as being unpatentable over Yakshin et al. in view of Hawker et al. The rejection is respectfully traversed.

Unlike the present claims 1 and 16, neither Yakshin et al. nor Hawker et al. (as discussed above) provides a substrate with a defect nor does it teach the mitigation of a topological defect of a substrate. Therefore the rejection of claims 1 and 16 should be withdrawn. The rejection of claims 2-8, 10 and 14 should be withdrawn at least because

they depend from claim 1. The rejection of claims 17-19 should be withdrawn at least because they depend from claim 16.

Therefore the rejection should be withdrawn.

Claims 9, 13 and 20 are rejected as being unpatentable over Yaksin et al. in view of Hawker et al. and further in view of Hawryluk. The rejection is respectfully traversed.

The rejection of claims 9 and 13 should be withdrawn at least because they depend from claim 1. The rejection of claim 20 should be withdrawn at least because it depends from claim 16.

Claim 11 is rejected as being unpatentable over Yakshin et al. in view of Hawker et al. and further in view of Mirkarimi et al. The rejection is respectfully traversed.

The rejection of claim 11 should be withdrawn at least because it depends from claim 1.

Claim 12 is rejected as being unpatentable over Yakshin et al. in view of Hawker et al. and further in view of Knapp et al. The rejection is respectfully traversed.

The rejection of claim 12 should be withdrawn at least because it depends from claim 1.

Claims 1-4 are rejected as being unpatentable over Sasai et al. in view of Murakami et al. in view of Hawker et al.

There is no teaching in either reference of a method that includes providing a substrate with a defect. Therefore the rejection of claim 1 should be withdrawn. The rejection of claims 2-4 should be withdrawn at least because they depend from claim 1.

Therefore the rejection should be withdrawn.

### Conclusions

It is submitted that this application is in condition for allowance based on claims 1-20 in view of the foregoing comments.

If any impediments remain to prompt allowance of the case, please contact the undersigned at 808-875-0012.

Respectfully submitted,

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